

## CLAIMS

What is claimed is:

1. An optical transmission system comprising:  
a plurality of optical signal transmitters for receiving RF signal inputs and  
transmitting optical signals, wherein each optical signal produces optical signals having a  
first characteristic wavelength;  
a plurality of optical transmission lines coupled to said optical signal transmitters  
and to at least one headend, said head end including at least one DWDM signal receiver;  
said at least one DWDM signal receiver having a second characteristic  
wavelength, said second characteristic wavelength corresponding to the first  
characteristic wavelength of the optical signal transmitter;  
an output from said at least one DWDM signal receiver;  
at least one information signal line coupled to said output of said at least one  
DWDM signal receiver; and  
wherein there is no distribution hub operationally coupled between said plurality  
of optical signal transmitters and said headend.

2. The optical transmission system of claim 1, wherein said plurality of optical signal  
transmitters produce a plurality of optical signals, and wherein said plurality of optical  
signals are freely combined.

3. The optical transmission system of claim 1, wherein each optical signal  
transmitter includes an upconverter.

1 4. The optical transmission system of claim 3, wherein each upconverter is  
2 characterized by a frequency band, and further wherein said frequency band is unique to  
3 that said upconverter.

1 5. The optical transmission system of claim 3, wherein there is no overlap between  
2 frequency bands corresponding to each of said upconverters.

1 6. The optical transmission system of claim 2, wherein said plurality of optical  
2 signals are combined with a splitter/combiner apparatus.

1 7. The optical transmission system of claim 1, wherein the output from a first of said  
2 at least one DWDM receivers and the output from a second of said at least one DWDM  
3 receivers are signals having different wavelengths, and wherein said different  
4 wavelengths do not converge.

8. A method of optically transmitting a signal comprising:

receiving a plurality of RF signal inputs;

transmitting a plurality of optical signals from at least one optical transmission source on a plurality of optical transmission lines, wherein each optical signal has a first characteristic wavelength;

coupling at least one of said optical transmission lines to at least one headend, said headend including at least one DWDM signal receiver having a second characteristic wavelength, said second characteristic wavelength corresponding to the first characteristic wavelength of the optical signal transmitter;

transmitting an output from said at least one DWDM signal receiver;

coupling at least one information signal line to said output of said at least one DWDM signal receiver; and

wherein no distribution hub is operationally coupled between said at least one of said optical transmission lines and said headend.

9. The method of claim 8, wherein the step of receiving the plurality of RF signal inputs includes receiving the plurality of RF signal inputs into a plurality of optical signal transmitters.

10. The method of claim 8, further comprising the step of combining a plurality of said optical transmission lines together at a location between the transmission source and the headend.

- 1 11. The method of claim 8, further comprising the step of upconverting the plurality
- 2 of optical signals before the step of transmitting the plurality of optical signals from at
- 3 least one transmission source.

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1 12. An optical transmission system comprising:

2 a plurality of optical signal transmitters for receiving RF signal inputs and  
3 transmitting optical signals, wherein each optical signal transmitter produces optical  
4 signals having a first characteristic wavelength;

5 a plurality of transmission clusters, each transmission cluster comprising at least  
6 one of said optical signal transmitters;

7 a plurality of optical transmission lines coupled to said optical signal transmitters  
8 and to at least one headend, said head end including at least one DWDM signal receiver;

9 said at least one DWDM signal receiver having a second characteristic  
10 wavelength, said second characteristic wavelength corresponding to the first  
11 characteristic wavelength of the optical signal transmitter;

12 an output from said at least one DWDM signal receiver;

13 at least one information signal line coupled to said output of said at least one  
14 DWDM signal receiver; and

15 wherein there is no distribution hub operationally coupled between said plurality  
16 of optical signal transmitters and said headend.

1 13. The optical transmission system of claim 12, wherein said plurality of optical  
2 signal transmitters produce a plurality of optical signals, and wherein said plurality of  
3 optical signals are freely combined.

1 14. The optical transmission system of claim 12, wherein each optical signal  
2 transmitter includes an upconverter.

1 15. The optical transmission system of claim 14, wherein each upconverter is  
2 characterized by a frequency band, and further wherein said frequency band is unique to  
3 that said upconverter.

1 16. The optical transmission system of claim 14, wherein there is no overlap  
2 between frequency bands corresponding to each of said upconverters.

1 17. The optical transmission system of claim 13, wherein said plurality of optical  
2 signals are combined with a splitter/combiner apparatus.

1 18. The optical transmission system of claim 12, wherein said headend includes a  
2 single receiver.

1 19. The optical transmission system of claim 12, wherein said headend includes a  
2 plurality of receivers.

1 20. The optical transmission system of claim 12, wherein said headend includes at  
2 least one dense wavelength division demultiplexer (DWDD) device.

- 1 21. The optical transmission system of claim 12, wherein the output from a first of  
2 said at least one DWDM receivers and the output from a second of said at least one  
3 DWDM receivers are signals having different wavelengths, and wherein said different  
4 wavelengths do not converge.